Generations of Waste

CONTENT AREAS

- Science archaeology, classification, prediction, verification
- Social Studies
 American history, family structure, lifestyle

OBJECTIVES

Students will. . .

- identify, determine the amount, and classify the trash produced by a typical family from a historic time period
- understand how family lifestyles throughout American history have changed
- relate these changes to the amount and type of trash generation

MATERIALS For groups of four to

six students

 Artifact Code Sheet (one for each member)

- Site Sheets A, B, C, D, or E Waste from Generation to Generation (one for each student)
- Tally Sheet (for each group)
- Site Report Sheet and Presentation Organizer (for each group)
- Archaeological Convention (handout for each group)

TIME
Three periods
45 minutes each

rash is not a modern phenomenon. Since the dawn of civilization, humans have had to deal with their waste.

What has changed over the course of history is the amount and kinds of trash we produce. This activity is a simulated archaeological dig that allows students to deduce a particular historical time period based on the trash that a "typical" family has discarded.

Students then analyze the trash and discuss their findings, forming a better picture of today's solid waste problems versus those in the past. For example, we no longer worry about what to do with horse manure. But we do have to deal with used batteries, an unknown issue 100 years ago.

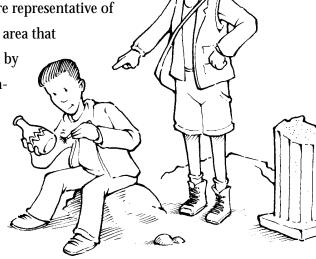
This activity has a definite interdisciplinary flavor. It asks students to identify historical periods based on the trash that they find. The archaeologic aspect of the activity connects with both science and social studies. This activity is also appropriate to use in a science class to introduce or improve students'

The grids for this activity are representative of a cross-sectional view of an area that might have been uncovered by an archaeological team excavating a dig site. There are

skills for identifying and classifying.

five sites. The time periods are Native American, Colonial, the 1800s,

1940–1960s, and 1980–1990s.



PROCEDURE

- 1. To introduce the lesson, ask students to answer the following questions: What is archaeology? What do archaeologists do? How do they work? Are any of you interested in becoming an archaeologist?
- 2. Divide the class into five groups with four to six students in each group. Each group will identify the trash during one historical period: Site A, Native American; Site B, Colonial; Site C, the 1800s; Site D, 1940–1960s; and Site E, 1980–1990s. Do *not* reveal the time period.

Make sure that each group examines a different time period. Give every student in each group a copy of their assigned Site Sheet and an Artifact Code Sheet. Also give each group a Site Report Sheet and an Artifact Sheet.

- 3. You will act as a facilitator as each group "excavates" their site, identifies artifacts, and completes their Site Report Sheets. To do this, each group must:
 - **a**. Identify the items located on the site.
 - **b.** Make a list of the all materials located in the grid on the artifact sheet.
 - c. Count the number of each artifact found.
 - **d**. Identify the historical time period.
 - **e**. Classify the artifacts according to function:
 - food
- hygiene
- shelter and "yard"
- tools
- food preservation/ packaging
- transportation
- amusement
- hunting
- cooking
- clothing

- **f.** Determine the material(s) each artifact is made of (i.e., paper, plastic, glass, leather, food waste, metal, wood, textiles, rubber, yard waste).
- g. Prepare a presentation that explains how the time period and lifestyle affected their family's trash.
- **4.** When all groups have completed their Site Report Sheets, each group prepares and presents their information to the class.
- 5. When all information has been presented, lead the class in a discussion of how lifestyles have changed throughout history in the United States. Encourage discussion on how those changes have contributed to today's solid waste. The interesting discovery is that all time periods created trash: the difference is that the increase in our population's "throw away society" has led to our present solid waste situation.

OUESTIONS

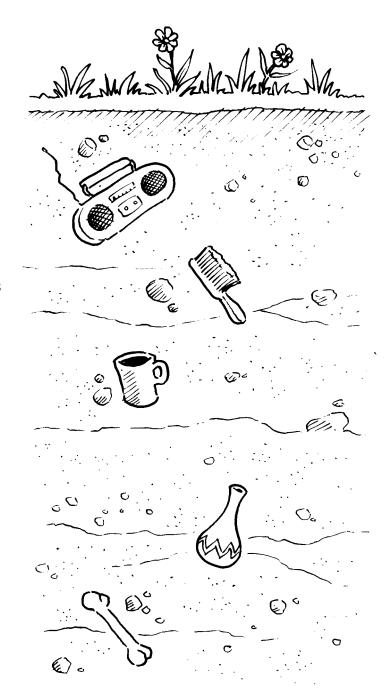
- **a**. Compare the Native American family with today's family. Identify the major differences in waste creation.
- **b.** Did any group of people during any time period create less trash than we do today? Why or why not?
- c. Is there a commonality between all the time periods? Is there any kind of trash or artifact that did not change?
- **d.** How do you think the advances in materials science have affected lifestyles and subsequently, generating trash?
- e. What kinds of problems did trash present during the various time periods? How have waste treatment methods changed?

EXTENSIONS

- 1. Have students research the dates when significant materials such as cloth, pottery, paper, glass, aluminum, steel, and various plastics were invented.
- Research and develop a timeline or storyboard that illustrates the history of preservation and packaging.
- **3.** Create a timeline of inventions that have had an affect on our lifestyles resulting in a change in what people throw away.

RESOURCES

- Flexible Packaging Association John S. Henderson, Manager Educational Programs 1090 Vermont Avenue, NW Suite 500 Washington, DC 20005-4960
- 2. The Dow Chemical Company 2040 Dow Center Midland, MI 48674
- 3. Partners For Environmental Progress P.O. Box 130116 Ann Arbor, MI 48113
- Dr. William Rathje, Director The Garbage Project University of Arizona



Answer Key to Artifacts List

SITE A	SITE C	P14 poodle skirt = 1
Native American	1800s	W5 wooden crate = 3
R7 redware pottery = 20	P12 potato = 13	C12 cloth diaper = 5
F2 fish bones = 18	W4 wooden pipes = 26	K1 Kleenex = 6
S6 snail shells = 25	H1 handkerchiefs = 11	G1 glass milk bottles = 3
G6 gourds = 8	C9 china = 17	L6 light bulbs = 27
D4 dried berries = 26	C18 copper pots = 7	C10 cigarettes = 5
B4 beads = 8	G2 glasses (drinking) = 2	A3 alum. toothpaste tube = 9
S11 stone tool shards = 30	B5 beef bones = 13	P2 paper back books = 4
B6 bird bones = 14	S12 string = 9	• •
R3 raw hide = 2		3
T8 $tobacco = 2$		R5 45 record = 2
A10 $ax = 1$	L1 lamp chimney = 9	T3 telephone bill = 3
	B9 brick = 17	D3 dish towels = 6
C17 copper knife = 3	B12 burlap bags = 4	R1 radio tube = 20
S8 spears = 4	F5 fruit peels = 26	T5 toilet paper roll = 3
A8 $arrows = 9$	V2 vegetable peels = 36	L2 lawn clippings = 6
F1 feathers = 8	B11 butcher paper = 8	H1 handkerchief = 2
R8 reed basket = 4	M1 mason jars = 11	
D5 dried pumpkin = 5	W2 whale bone = 2	SITE E
C19 corn or pea seeds = 26	I1 ice pick = 1	1980s-1990s
S2 nut shells = 33	H2 hammer = 1	P1 paper bag = 13
F5 fruit peels = 8	I2 ice tongs = 1	M6 microwave container = 26
A6 antlers = 7	J1 jar lids = 5	P13 clear plastic wrap = 18
A5 animal fat = 4	M2 meat grinder (hand) = 2	A2 aluminum can = 4
S4 $skins = 9$	B7 bottles (glass) = 3	M7 milk/juice box = 7
	W6 woven baskets = 27	R9 refillable detergent bottle = 2
SITE B	T8 tobacco = 5	G5 Gore-Tex jacket = 1
Colonial	T4 tin cans = 15	B3 battery (c-size) = 13
P12 potato = 13	L4 leather bound books = 5	A1 airplane ticket = 3
C11 clay pipes = 26	C20 cotton cloth = 5	C8 chicken bone = 10
S5 smoked fish = 18	W3 wood ash = 22	P9 plastic CD case = 4
G3 glazed pottery = 17	C6 chamber pot = 1	P6 pantyhose = 4
B8 brass pots = 7	S3 silk cloth = 3	P10 plastic grocery bag = 4
T1 tankard (pewter) = 5	T6 train ticket = 2	F5 fruit peel = 8
D1 deer bones = 13	10 tidiii ticket – 2	P7 photocopy = 33
C8 chicken bones = 25	SITE D	
L3 lead shot = 13	1940s-1960s	F6 foam plastic tray/cup = 5 P8 plastic bottle/jug = 11
B9 brick = 16		, , , ,
B2 barrel staves = 4	P1 paper bags = 13	N1 newspaper = 8
	A4 alum. t.v. dinner tray = 26	C13 cloth lunch bag = 1
	W1 wax paper wrapper = 18	L8 LL Bean Catalogue = 1
•	M4 Melmac dishes = 17	D2 disposable diaper = 5
14 iron nails = 8	C2 cardboard boxes = 7	P11 plastic pickle pouch = 1
M3 medicine bottles = 11	S1 Sears catalog =1	C15 computer printer paper
G4 gold beads = 3	R2 ration stamps = 13	feed = 11
A9 $awl = 1$	B10 bus ticket = 9	C16 computer disk = 3
S9 spinning wheel = 1	C8 chicken bones = 25	P5 milk carton = 7
A7 anvil = 2	C14 glass cola bottles = 13	K1 Kleenex = 8
F5 fruit peels = 2	N2 nylon stockings = 16	J2 junk mail = 13
C4 case bottles = 3	C3 cardboard record sleeve = 4	C5 cassette tape/VCR tape = 4
M5 metal buttons = 27	F5 fruit peels = 27	T2 Teflon-coated pan = 2
F3 fish hooks = 9	V2 vegetable peels = 33	T7 T-shirt = 6
L4 leather bound book = 1	B11 butcher paper = 8	x vegetable peel = 8
A10 $ax = 1$	S7 soap powder boxes = 11	T3 telephone bill = 4
W3 wood ash = 20	N1 newspaper = 8	P4 paper towel = 15
F4 flint = 14	S10 steel lunch box/thermos = 1	B1 Barbara Streisand ticket = 2
T8 tobacco = 8	L5 Life Magazine = 2	T5 toilet paper roll = 3
L7 linen cloth = 8	M8 motor oil can = 4	C7 chemical fertilizer bag = 1



Artifact Code Sheet

A1	airplane ticket	D5	dried pumpkin	P8	plastic bottle/jug
A2	aluminum can	F1	feathers	Р9	plastic CD case
А3	aluminum toothpaste tube	F2	fish bones	P10	plastic grocery bag
A4	aluminum TV dinner tray	F3	fishhook	P11	plastic pickle pouch
A 5	animal fat	F4	flint	P12	potato
Α6	antler	F5	fruit peel	P13	clear plastic wrap
A7	anvil	F6	foam plastic cup	P14	poodle skirt
A8	arrow	G1	glass milk bottle	R1	radio tube
Α9	awl	G2	glasses (drinking)	R2	ration stamps
A10	ax	G3	glazed pottery	R3	raw hide
B1	Barbara Streisand Ticket	G4	gold beads	R4	rayon blouse
B2	barrel stave	G5	Gore-Tex jacket	R5	45 record
В3	battery (c-size)	G6	gourd	R6	recycled paper
В4	beads	H1	handkerchief	R7	redware pottery
B5	beef bone	H2	hammer	R8	reed basket
В6	bird bone	11	ice pick	R9	refillable detergent bottle
В7	bottles (glass)	12	ice tongs	S1	Sears catalog
В8	brass pot	13	iron horse shoe	S2	shells of nuts
В9	brick	14	iron nail	S3	silk cloth
B10	bus ticket	J1	jar lid	S4	skins
B11	butcher paper	J2	junk mail	S5	smoked fish
B12	burlap bag	K1	Kleenex	S6	snail shell
C1	candle	L1	lamp chimney	S7	soap powder box
C2	cardboard box	L2	lawn clippings	S8	spears
C3	cardboard record sleeve	L3	lead shot	S9	spinning wheel
C4	case bottle	L4	leather-bound book	S10	steel lunch box/thermos
C5	cassette tapes/VCR tape	L5	Life Magazine/black and white	S11	stone tool shard
C6	chamber pot	L6	light bulb	S12	o .
C7	chemical fertilizer bag	L7	linen cloth	T1	tankard (pewter)
C8	chicken bone	L8	LL Bean catalogue	T2	Teflon-coated pan
C9	china	M1	mason jar	Т3	telephone bill
C10	cigarette	M2	meat grinder (hand)	T4	tin can
C11	clay pipe	M3	medicine bottle	T5	toilet paper roll
	cloth diaper	M4	Melmac dish	T6	train ticket
	cloth lunch bag	M5	metal button	T7	T-shirt
	glass cola bottle	M6	microwave entree container	T8	tobacco
	computer printer paper feed	M7	milk/juice box	V1	vegetable leaves
	computer disk	M8	motor oil can	V2	vegetable peels
C17	copper knife	N1	newspaper	W1	wax paper wrapper
	copper pot	N2 P1	nylon stocking with seams	W2	whale bone
C20	corn/pea seed cotton cloth	P2	paper bag paperback book	W3	wood ash
	cotton stocking	P3		W4	wooden pipes
C21 D1	deer bone	P4	paper plate	W5	wooden crate
D1 D2	disposable diaper	P4 P5	paper towel milk carton	W6	woven basket
D2 D3	dish towel	P6	pantyhose		
DS	CIST LOVE	10	parityriose		

P7 photocopy

D4 dried berries/fruit

Site A: Waste from Generation to Generation

R7 F2	••••••	R7 F2	R7 F2		R7		••••
R7 F2	R7	•••••	••••••	•••••	••••••		••••
R7	S6 S6 S6	S6 S6 S6 S	S6 S6 S6 S6	R7	S6 S6 S6 S6		••••
S6 F2 I	2 F2	••••••	R7	•••••••	••••••		••••
G6 D4 D4 D	4 D4 D4 D	4	D5	G6	D4 D4 D4 D4	•••••	••••
D4 D4 D4 D4	D4 D4 D4	D4	•••••	••••••	••••••	•••••	••••
R8 C19 C19	C19 C19 C	C19 C19 C	19	R8 S2 S2	S2 S2 S2 S2		••••
S2 S2 S2 S				R8			
C19 C19 C1	9 C19 C19	C19 C19 (C19 C19 C19				
•••••	S2 S2 S2	2 S2 S2 S		S2 S2 S2	B6 B6 B6		••••
B6 B6 B6							
					FS	5 F5 F5	
R8 C19 C19	9 C19 C19	C19 C19 (C19 C19 C19				
F5 F5 F5 F5 F	5						
		S2 S2	S2 S2 S2 S	2 S2 S2 S2	B6 B6 B6		
T8		A10		C17			
S11 S11 S11	S11 S11 S	11 S11 S11	S11 S11 S11				
			A	6 A6 A6		S8 S8 S8	
A8 A8 A8 A8				A8 A8 A8 A8	3 D	5	
S11 S11 S11	S11 S11 S	11 S11		F1 F1 F	1		
F1 F1 F1		A6	A6		A8		
R3 R3				C17			••••
	S11 S11 S	11 S11 S11	S11 S11 S11		T8		
G6 G6 G6 G	6 A5 A5 /	45					
S4 S4 S4			S4 S4 S4			S4 S4	S∠
S6 S6 S6 S6	S6		B4 B4 B4	S1 ⁻	1 S11 S11	B4 B4 B4	
B4 B4							
	F1 F1		B6 B6	6 B6 B6 B6	R7 R	7R7	
		1 D4 D4 G6) 		F2 F2 F2 F2 F	2 F2 F2 F2 F2 F2	F2
S6 S6 S6 S6 S	S6	R	R7 R7 R7 R7 R7	7			
S8					C1	7	
A6 A6	D5 D	5 D5					
R7 R7 R7					G6 A5		

Site B: Waste from Generation to Generation

G3 S5	•••••		G3 S5	•••••
G3 S5	G3 D1		•••••	
G3 S5 D1	•••••	G3 [D1	
	G3 D1 C8	C8 C8 C8 C8 C8 C8	C8 C8 C8	
G3 C8 C8 C8 C8		G3 I		
	C11 C11 C11 C11		F4 F4 F4	
	C11 C11 C11 C11 C			
B2 C1 C1 C1 C1 (B2 V	/1 V1 V1 V1 V1 V1 V1 V1	/1 V1 V1
V1 V1		4 4 4 4 4	•••••	
C1 C1 C1 C1 C1 C				V1 V1 V1
V1 V1 V1 V1 V1 V		M3 M3		
L7 L7 L7		B2 (C1 C1 C1 C1 C1 C1 C1	C1 C1
- <i></i> L7 L7 L7 L7 L7				
	V1 V1 V1 V	V1 V1 V1 V1	M3 M3 M3	14 14 14
T8				A10
I3	W3 W3 W3 W	'3 W3 B9 B9 B9 B9	•••••	
	5 M5 M5 M5 M5 M5 M			
		B9 B9 B9 B9 E	 39	
	•••••	,	•••••	L3 L3 L3 L3
L3 L3	•••••			•••••
F4 F4 F4 F4	M5 M5 M5 M5 M5	M5 M5 W3 W3 W3	3 W3 W3 W3	•••••
••••••		_4	•••••	•••••
B9 B9 B9	Т8	B9 B9 B9 B	9 W3 W3 W3 W3 W	'3 W3 W3
D1 D1 D1	F5 F5	C4 C	4 C4	•••••
M5 M5 M5 M5 I	M5 M5 M5 M5 T	8 B8 B8	B B8 B8 T8 T8 T8 T8 T8	F3 F3 F3
F3 F3 F3 F3 F3 F3	3 C8 C8 C8 C8 C8		•••••	•••••
	G4 G4		T1 T1 T1 T1 T1	•••••
A7 M3 M3 N	ИЗ МЗ МЗ		G3 G3 G3	•••••
A9	•••••			S9
A7	•••••			
P12 P12 P12 P1	2 P12 P12			
	C11 C11 C11 C11	B8	F4 F4 F4 S5 S5 S5	S5 S5 S5 S
S5 S5 S5 S5		-		
		G	33 G3 G3 G3 G3	
C8 C8 C8 C8 C8	•••••			
C8 C8 C8 C8 C8 F4 F4 F4 F4				
C8 C8 C8 C8 C8 F4 F4 F4 F4 W3 W3		D1 D1 D1 D1	L3 L3	L3 L3

Site C: Waste from Generation to Generation

C9 H1			•••••		C9	H1
C9 H1 L1	L1 L1	C9	B5	•••••	••••••	•••••
C9 H1 B				C9 B5		
	······································	•••••	C9 R5 C8	3 C8 C8 C8 C8 C	`8 C8 C8 C8 (`8
		 H1 H1 H1		C9 B5		
	V4 W4 W4		•••••	C7 D3		
۷۷4 ۷				4 \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \		
		/4 VV4 VV4	VV4 VV4 VV	4 W4 W4 W4 W4		
312 F5 F5 F5 I	-5 F5 F5 F5				/2 V2 V2 V2 \	/2 V2 V2 V2 V2
/2 V2			12 B11 B1	B11 B11 B11		
5 F5 F5 F5 F5						V2 V2 V2
V2 V2 V2 V2 V	/2 V2 V2 V2	2 V2 M	1 M1 M1 I	_4 L4 L4 L4		
	L1 L1 L	1 L1				
				5 F5 F5 F5 F5 F5 I	-5 F5	
V2 V2 V2 V2 V	/2 V2 V2 V2	2 V2 M1	M1 M1			B11 B11 B11
	T6					
V 2			G2	В9	B9 B9 B9 B9 E	9 B9 B9 B9
N6 W6 W6 W	′6 W6 W6 \	N6 W6 W	6 W6 W6 V	/6	••••••••••	••••••
•••••	•••••	•••••		B9 B9 B9 B9	S12 S12 S1	2 S12 S12 S12
•••••	•••••		•••••	•••••	W3	W3 W3 W3 W3
 W3 W3 W3	 W3		•••••	W3 W3 W3	W3 W3 W3 V	V3 W3
L1 L1 W6 V						
				•••••	•••••	•••••
	C20 C20	B9 B9 B	 20			
T6	220 020					
B5 B5 M2 N	//) D	 87 B7 B7				
20 D0 D0 IVIZ IV	/IZ D	/ D/ D/				 ′
		0.010.01		W6 W6 W6 W6 V	VO VVO VVO VV	
		8 C18 C1		T8 T8 T8 T8		
	T4 T4 T	4	T4 T4 T4			
T4 T4 T4						
C8 C8 C8 C8 (C8					
C8 C8 C8 C8 (H2						
C8 C8 C8 C8 (H2	И1 M1 M1 I	M1	C9 (C9 C9		
C8 C8 C8 C8 (H2		M1	C9 (C9 C9		
C8 C8 C8 C8 (H2	И1 M1 M1 I	M1	C9 (9 C9 J1 J1 J1 J1 J1	12	
C8 C8 C8 C8 (H2	И1 М1 М1 I V2 V2		C9 C		12	
C8 C	И1 М1 М1 I V2 V2		C9 C		12	
C8 C	M1 M1 M1 I V2 V2 P12 P12 P12	2	C9 C	J1 J1 J1 J1 J1	12 11 H1 H1 H1	T4 T4 T4 T4 T4
C8 C	M1 M1 M1 I V2 V2 P12 P12 P12	2		J1 J1 J1 J1 J1	12 11 H1 H1 H1	T4 T4 T4 T4 T4
C8 C	M1 M1 M1 I V2 V2 P12 P12 P12 V4 W4 W4 V	2	C18	J1 J1 J1 J1 J1 F	I2 I1 H1 H1 H1	T4 T4 T4 T4 T4
C8 C	M1 M1 M1 I V2 V2 P12 P12 P12 V4 W4 W4 V	2	C18	J1 J1 J1 J1 J1	I2 I1 H1 H1 H1	T4 T4 T4 T4 T4
C8 C	M1 M1 M1 I V2 V2 P12 P12 P12 V4 W4 W4 V	2	C18	J1 J1 J1 J1 J1 F		
C8 C	M1 M1 M1 I V2 V2 P12 P12 P12 V4 W4 W4 V	2	C18	J1 J1 J1 J1 J1 F	C20 C20 C20)
C8 C	M1 M1 M1 I V2 V2 P12 P12 P12 V4 W4 W4 V C8	2	C18	J1 J1 J1 J1 J1 F	C20 C20 C20	

Site D: Waste from Generation to Generation

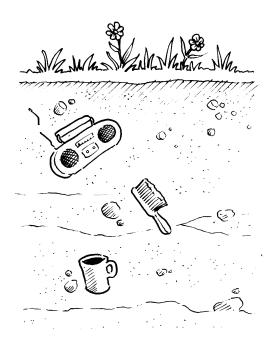
M4 W1		•••••		•••••	M4 W1	
M4 W1	M4 R2	N		•••••		•••••
M4 R2			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	•••••	•••••	•••••
	2 60 60 60		$ \begin{array}{cccccccccccccccccccccccccccccccccccc$			
M4 C8 C8 C8 C8 C8 V	Z CO CO CO	C0 C0 C0 (C8 C8 C8 C8 M4		•••••	
C2 A4 A4 A4 A4 A4 A4	V I VV I VV I		1014		•••••	
C2 A4 A4 A4 A4 A4 A4 A4		Λ Λ Λ Λ Λ Λ				
C3	FO FO FO	F5 F5 F5 F5		• • • • • • • • • • • • • • • • • • • •	VZ VZ VZ	V2 V2 V2
V2 V2 V2	 FE FE	C3 BITE	311 B11 B11 E			
F5 F5 F5 F5 F5 F5 F5 F5 F5						V2 V2 V2
V2 V2 V2 V2 V2 V2	V2 V2 V2	5/ 5/	.5/			
K1 K1 K1			C3 F	5 F5 F5 F5	F5 F5 F5 F3	o F5
K1 K1 K1 k	<1 K1					
D.1 D.1		• • • • • • • • • • • • • • • • • • • •	'2 V2 V2 V2	.V2 V2 V2	2 V2 V2	S7 S7 S7
R4 R4	Bi	11 B11 B11				
T5					R5	R5
S1	R1 R1 R1 R1	• • • • • • • • • • • • • • • • • • • •	• • • • • • • • • • • • • • • • • • • •			
L6 L6 L6 L6 L6	16 16 16	16 16 1	6			
		• • • • • • • • • • • • • • • • • • • •	• • • • • • • • • • • • • • • • • • • •	• • • • • • • • • • • • • • • • • • • •		
N2 N2 N2 N2 N2 N2		0 B10 B10	• • • • • • • • • • • • • • • • • • • •			
N2 N2 N2 N2 N2	B10 B1	0 B10 B10	B10 B10		C14 C14	C14 C14 14
N2 N2 N2 N2 N2	B10 B1	0 B10 B10	B10 B10 L6 L6 L6	L6	C14 C14	C14 C14 14
N2 N2 N2 N2 N2 C14 T3 T3 T3 R1 R1 R1 R1 R1	B10 B1	0 B10 B10	B10 B10	L6	C14 C14	C14 C14 14
N2 N2 N2 N2 N2 C14 T3 T3 T3 R1 R1 R1 R1 R1 R1 W5 W5 T5	B10 B1	0 B10 B10 L6 L6 L6	B10 B10 L6 L6 L6	L6	C14 C14	C14 C14 14
N2 N2 N2 N2 N2 C14 T3 T3 T3 R1 R1 R1 R1 R1	B10 B1	0 B10 B10 L6 L6 L6 N2	B10 B10	L6	C14 C14	C14 C14 14
N2 N2 N2 N2 N2 N2 C14 T3 T3 T3 R1 R1 R1 R1 R1 R1 W5 W5 T5 R1 R1 R1 R1 R1 N2 N R2R2R2	B10 B1	0 B10 B10 L6 L6 L6 N2	B10 B10	L6	C14 C14	C14 C14 14 C12
N2 N2 N2 N2 N2 N2 C14 T3 T3 T3 R1 R1 R1 R1 R1 R1 W5 W5 T5 R1 R1 R1 R1 R1 R1 N2 N	B10 B1 L2 L2 L2 I2 N2 N2 N2	0 B10 B10 L6 L6 L6 N2	B10 B10 L6 L6 L6 N2 N2	L6	C14 C14	C14 C14 14
N2 N2 N2 N2 N2 N2 C14 T3 T3 T3 R1 R1 R1 R1 R1 R1 W5 W5 T5 R1 R1 R1 R1 R1 N2 N R2R2R2	B10 B1 L2 L2 L2 I2 N2 N2 N2	0 B10 B10 L6 L6 L6 N2 D	B10 B10	L6	C14 C14	C12
N2 N2 N2 N2 N2 N2 C14 T3 T3 T3 R1 R1 R1 R1 R1 R1 W5 W5 T5 R1 R1 R1 R1 R1 R1 N2 N R2R2R2 C12 C12 C12 C12 T5	B10 B1 L2 L2 L2 I2 N2 N2 N2 L6 L6 I	0 B10 B10 L6 L6 L6 N2 G1 C L6 L6 L6	B10 B10	L6 2 N2	M8 M8 I	C12 V18
N2 N2 N2 N2 N2 N2 C14 T3 T3 T3 R1 R1 R1 R1 R1 R1 W5 W5 T5 R1 R1 R1 R1 R1 R1 N2 N R2R2R2 C12 C12 C12 C12 T5	B10 B1 L2 L2 L2 I2 N2 N2 N2 L6 L6 I	0 B10 B10 L6 L6 L6 N2 G1 C L6 L6 L6	B10 B10 D L6 L6 L6 N2 N2 N3 D3 G1 G1 L6 L6 L6	L6 2 N2	M8 M8 I	C12 V18
N2 N2 N2 N2 N2 N2 C14 T3 T3 T3 R1 R1 R1 R1 R1 R1 R1 W5 W5 T5 R1 R1 R1 R1 R1 R1 N2 N R2R2R2 C12 C12 C12 C12 T5 A3 A3 A3	B10 B1 L2 L2 L2 I2 N2 N2 N2 L6 L6 I	0 B10 B10 L6 L6 L6 N2 G1 C L6 L6 L6	B10 B10 D L6 L6 L6 N2 N2 N3 D3 G1 G1 L6 L6 L6	L6 N2 N2 O C10 C	M8 M8 I	C12 V18
N2 N2 N2 N2 N2 N2 C14 T3 T3 T3 R1 R1 R1 R1 R1 R1 W5 W5 T5 R1 R1 R1 R1 R1 R1 N2 N R2R2R2 C12 C12 C12 C12 T5 A3 A3 A3 A3 A3	B10 B1 L2 L2 L2 I2 N2 N2 N2 L6 L6 L C2	0 B10 B10 L6 L6 L6 N2	B10 B10 D L6 L6 L6 N2 N2 D3 D3 G1 G1 L6 L6 L6 E10 C10 C1	0 C10 C	M8 M8 I 10 P2 P2	C12 W8 P2 P2
N2 N2 N2 N2 N2 N2 C14 T3 T3 T3 R1 R1 R1 R1 R1 R1 W5 W5 T5 R1 R1 R1 R1 R1 R1 N2 N R2R2R2 C12 C12 C12 C12 T5 A3 A3 A3 A3 A3 A3	B10 B1 L2 L2 L2 I2 N2 N2 N2 L6 L6 L C2	0 B10 B10 L6 L6 L6 N2 D G1 (L6 L6 L6 C2C2C2 C	B10 B10 D L6 L6 L6 N2 N2 D3 D3 G1 G1 L6 L6 L6 E10 C10 C1	0 C10 C	M8 M8 I 10 P2 P2	C12 W8 P2 P2
N2 N2 N2 N2 N2 N2 C14 T3 T3 T3 R1 R1 R1 R1 R1 R1 R1 W5 W5 T5 R1 R1 R1 R1 R1 R1 N2 N R2R2R2 C12 C12 C12 C12 T5 A3 A3 A3 A3 A3 A3 C8 C8 C8 C8 C8 N1 N L5	B10 B1 L2 L2 L2 I2 N2 N2 N2 L6 L6 L C2 L2 L2 L2 I1 N1	0 B10 B10 L6 L6 L6 N2 G1 G L6 L6 L6 C2C2C2 C	B10 B10 D L6 L6 L6 N2 N2 D D D D D D D D D D D D D D D D D D D	L6 ! N2 0 C10 C A3 /	M8 M8 I 10 P2 P2	C12 W8 P2 P2
N2 N2 N2 N2 N2 N2 C14 T3 T3 T3 R1 R1 R1 R1 R1 R1 R1 W5 W5 T5 R1 R1 R1 R1 R1 R1 N2 N R2R2R2 C12 C12 C12 C12 T5 A3 A3 A3 A3 A3 A3 C8 C8 C8 C8 C8 N1 N L5 M4 M4 M4	B10 B1 L2 L2 L2 I2 N2 N2 N2 L6 L6 L C2: L2 L2 L2 I N1	0 B10 B10 L6 L6 L6 N2 G1 G L6 L6 L6 C2C2C2 C	B10 B10 D L6 L6 L6 N2 N2 D3 D3 G1 G1 L6 L6 L6 E10 C10 C1	L6 ! N2 0 C10 C A3 /	M8 M8 I 10 P2 P2	C12 W8 P2 P2
N2 N2 N2 N2 N2 N2 C14 T3 T3 T3 R1 R1 R1 R1 R1 R1 R1 W5 W5 T5 R1 R1 R1 R1 R1 R1 N2 N R2R2R2 C12 C12 C12 C12 T5 A3 A3 A3 A3 A3 A3 A3 A3 C8 C8 C8 C8 C8 C8 N1 N L5 M4 M4 M4 M8	B10 B1 L2 L2 L2 I2 N2 N2 N2 L6 L6 L C2 L2 L2 L2 I1 N1	0 B10 B10 L6 L6 L6 N2 G1 G L6 L6 L6 C2C2C2 C	B10 B10 L6 L6 L6 N2 N2 33 D3 G1 G1 L6 L6 L6 10 C10 C1 S10 S7 S7	L6 ! N2 0 C10 C A3 /	M8 M8 I 10 P2 P2 43 A3 I N1 N1 N	C12 M8 P2 P2
N2 N2 N2 N2 N2 N2 C14 T3 T3 T3 R1 R1 R1 R1 R1 R1 R1 W5 W5 T5 R1 R1 R1 R1 R1 R1 N2 N R2R2R2 C12 C12 C12 C12 T5 A3 A3 A3 A3 A3 A3 C8 C8 C8 C8 C8 N1 N L5	B10 B1 L2 L2 L2 I2 N2 N2 N2 L6 L6 L C2 L2 L2 L2 I1 N1 P14 C2	O B10 B10 L6 L6 L6 N2 G1 G L6 L6 L6 C2C2C2 C S S7 S7 S7	B10 B10 B10	L6 ! N2 0 C10 C A3 / N1 N'	M8 M8 I 10 P2 P2 43 A3 1 N1 N1 N	C12 M8 P2 P2
N2 N2 N2 N2 N2 N2 C14 T3 T3 T3 R1 R1 R1 R1 R1 R1 R1 W5 W5 T5 R1 R1 R1 R1 R1 R1 N2 N R2R2R2 C12 C12 C12 C12 T5 A3 A3 A3 A3 A3 A3 A3 C8 C8 C8 C8 C8 C8 N1 N L5 M4 M4 M4 M8 A4 A4 A4 A4 A4 A4 A4 W1	B10 B1 L2 L2 L2 I2 N2 N2 N2 L6 L6 L C2 L2 L2 L2 I1 N1 P14 C2	0 B10 B10 L6 L6 L6 N2 G1 C L6 L6 L6 C2C2C2 C S7 S7 S7 S7 L5 P	B10 B10 B10	L6 ! N2 0 C10 C A3 / N1 N'	M8 M8 I 10 P2 P2 A3 A3 1 N1 N1 N	C12 M8 P2 P2 1 A4 A4 1 W1 W1
N2 N2 N2 N2 N2 N2 C14 T3 T3 T3 R1 R1 R1 R1 R1 R1 R1 W5 W5 T5 R1 R1 R1 R1 R1 R1 N2 N R2R2R2 C12 C12 C12 C12 T5 A3 A3 A3 A3 A3 A3 A3 C8 C8 C8 C8 C8 C8 N1 N L5 M4 M4 M4 M8 A4 A4 A4 A4 A4 A4 A4 W1	B10 B1 L2 L2 L2 I2 N2 N2 N2 L6 L6 L C2 L2 L2 L2 I1 N1 P14 C2	0 B10 B10 L6 L6 L6 N2 G1 C L6 L6 L6 C2C2C2 C S7 S7 S7 S7 L5 P	B10 B10 B10	L6 ! N2 0 C10 C A3 / N1 N:	M8 M8 I 10 P2 P2 A3 A3 1 N1 N1 N	C12 W8 P2 P2 1 A4 A4 1 W1 W1
N2 N2 N2 N2 N2 N2 C14 T3 T3 T3 R1 R1 R1 R1 R1 R1 R1 W5 W5 T5 R1 R1 R1 R1 R1 R1 N2 N R2R2R2 C12 C12 C12 C12 T5 A3 A3 A3 A3 A3 A3 A3 A3 A3 C8 C8 C8 C8 C8 N1 N L5 M4 M4 M4 M8 A4 A4 A4 A4 A4 A4 W1 M4 M4 M4 M8 A4 A4 A4 A4 A4 A4 W1	B10 B1 L2 L2 L2 I2 N2 N2 N2 L6 L6 L C2 L2 L2 L2 I1 N1 P14 C2 W5 W5 V5 V	0 B10 B10 L6 L6 L6 N2 G1 C L6 L6 L6 C2C2C2 C S S7 S7 S7 L5 P C8 C8 C8 C8	B10 B10 B10	L6 ! N2 0 C10 C A3 / N1 N:	M8 M8 I 10 P2 P2 A3 A3 1 N1 N1 N	C12 W8 P2 P2 1 A4 A4 1 W1 W1
N2 N2 N2 N2 N2 N2 C14 T3 T3 T3 R1 R1 R1 R1 R1 R1 R1 W5 W5 T5 R1 R1 R1 R1 R1 R1 N2 N R2R2R2 C12 C12 C12 C12 T5 A3 A3 A3 A3 A3 A3 A3 A3 A3 C8 C8 C8 C8 C8 N1 N L5 M4 M4 M4 M8 A4 A4 A4 A4 A4 A4 W1 M4 M4 M4 M8 A4 A4 A4 A4 A4 A4 W1	B10 B1 L2 L2 L2 I2 N2 N2 N2 L6 L6 L C2 L2 L2 L2 I1 N1 P14 C2 W5 W5 N	0 B10 B10 L6 L6 L6 N2 G1 C L6 L6 L6 C2C2C2 C S7 S7 S7 S7 L5 P C8 C8 C8 C8 C8	B10 B10 B10	0 C10 C A3 A N1 N'	M8 M8 I 10 P2 P2 A3 A3 1 N1 N1 N	C12 W8 P2 P2 1 A4 A4 1 W1 W1

Site E: Waste from Generation to Generation

A2 P13	J2 J2 J2	•••••	A2 P13	
•••••	P13	B3		
P13 B3		B3	 }	
	B3 C8 C8 C8 C8 C8 C			
P13 P13 P13	B;		······	•••••
	M6 M6 M6 M6			•••••
M7 M6 M6	M6 M6 M6 M6	M6 M6	M6 M6 M6 M6	
P10 F5 F5 F5 F		1010	P10 P7 P7 P7 P7 P7	7 D7
P7 P7 P7 P7 P7		P10 F6	F6 F6 F6 F6	·!
F/ F/ F/ F/ F/		PIU FO	P7 P7 P7 P7 P7	
			PIPIPIPIPI	P/
P7 P7 P7 P7	P8 P8 P8			
K1 K1 K1		P1	0 F5 F5 F5 T7 T7 T	
K1 K1 K1 K1	K1 C15 C15			
		P7 P7 P7 F	P7 P7 P7 P7 P7 P8 P8	3 P8
D2	T5			
R9		P6 P6 P6 P6	B1 B1 P5 P5 P5 P5	
A1 A1 A1		J2 J2 J2 J2 J	2	
			P9 P9 P9 T3 T3 T3	
T3 C7 V2 V2				
P4 P4 P4 P4				
P5 P5 P5		C15 C1	15 C15 C15	
R9	•••••	•••••		
•••••	••••••	V2 V2 P4	P4 P4 P4 P4	
T5	T2 T2 B3 B3			
C15 C15	C16 C16 C	:16	D2 D2 D2	
T5		M7 M7 M7 J2	2 .12 .12 .12 .12	
C5 C5 C5			T7 T7 T7	
C5	V2 V2	V2	N1 N1 N1 C13	•••••
N1 N1 N1 N1 N1				
L8			P8 P8 P8 P8 P8	•••••
A2 A2			1010101010	
P4 P4 P4 P4 P4				 D2
				2
	D1 D1			
P1 P1 P1 P1	P1 P1	M6	M6 M6 M6 M6 M	
M6 M6	M7	P13 P13 F	P13 P13 P13 P13 P13	P13
P13 P13 P13				
	B3 B3	B3 B3 B3	P9 G5 P1 P	1 P1 P1
P1 P1 P1				

DISCUSSION QUESTIONS

- a. Compare the Native American family with today's family. Identify the major differences in waste creation.
- **b.** Did any group of people create less trash than we do today? Why or why not?
- c. Is there a commonality between all of the periods? Is there any kind of trash or artifact that did not change?
- d. How do you think the advances in materials science have affected lifestyles and subsequently generating trash?
- e. What kinds of problems did trash present during the various time periods? How have waste treatment methods changed?



The Archeology of Garbage

One of the best ways to learn about a society is to study its garbage. No one knows more about garbage, both past and present, than Dr. William L. Rathje, Professor of Archaeology at the University of Arizona, and Director of The Garbage Project. Here are a few of the facts that he has gleaned from sorting through landfills.

- Past civilizations and cultures have been just as wasteful as our society. For example, certain Native American tribes routinely killed more bison than they needed to survive. One Plains tribe went so far as to eat only the nose, which they considered a great delicacy. The rest of the carcass was discarded.
- While your parents may be telling you to eat your vegetables, they probably don't take their own advice.
 Fresh produce is probably the biggest contributor to food waste in garbage.
- People over-report the amount of healthy food they eat, and underreport the amount of not-so-healthy food. The Garbage Project has shown that study respondents say that they eat far more tuna, cottage cheese and lettuce than they actually consume. On the other hand, they drink far more regular soda and beer than they admit.

These actual findings run contrary to what we would like to believe about ourselves and other people. Can you explain why these differences might exist?

Site Report Sheet and Presentation Organizer

INSTRUCTIONS FOR TALLY SHEET Excavating your site

You are a member of an archaeological team carrying out an excavation. Your team has been assigned a site filled with discards from an unknown time period in American history. Your group should work to identify all the artifacts found on the site. Based upon your findings, try to identify the time period from which they came.

- Using your site grid sheet which is labeled Waste from Generation to Generation, find an artifact that is represented by a letter and number. Look up the artifact on the Artifact Code Sheet. Write the name of the item on the Tally Sheet.
- **2.** Count how many of each artifact you find and add that to your Tally Sheet.

3. Classify each artifact according to its function. For example,

• food

shelter and

"yard"

food preservation/ packaging

amusement

cooking

hygiene and

tools

medicine

hunting

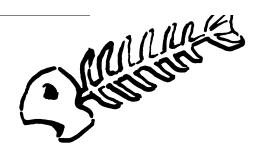
transportation

clothing

material).

(Not all artifacts will fit within these categories. You may need to assign specific functions to some items.)

4. Identify the materials used to make each artifact (examples: leather, wood, glass, paper, plastic, rubber, plant



Tally Sheet

Site Identification

Item Name	Number found	Function	Material
1.			
2.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
14.			
15.			
16.			
17.			

18.			
19.			
20.			
21.			
22.			
23.			
24.			
25.			
26.			
27.			
28.			
29.			
30.			
31.			
32.			
33.			
34.			
35.			
36.			

Archaeological Convention

Name

CLASS PRESENTATION

As part of an archaeological convention, your group will be presenting the findings from your site to the class. In order to have a complete report, answer these questions, using the data table below to organize your notes.



- 1. In what period did the family live? What were some of the artifacts that helped you to determine the timeframe? What resources would you use to be sure that the time period is correct?
- **2.** Look at the functions of the items on your list. Did this family lead a simple lifestyle or a lifestyle characterized by many conveniences? Why would you say that?
- 3. How did their lifestyle affect their family's trash?
- **4.** How much and what types of technology did this family enjoy? How did technology affect their trash?

SILE A		
1. Time period		
2. Lifestyle		
3. Technology		
4. Effects on trash		
SITE B		
1. Time period		
2. Lifestyle		
3. Technology		
4.56		
4. Effects on trash		

SITE C
1. Time period
2. Lifestyle
3. Technology
4. Effects on trash
SITE D
1. Time period
2. Lifestyle
3. Technology
4. Effects on trash
SITE E
1. Time period
2. Lifestyle
3. Technology
4. Effects on trash